

WHAT IS CLAIMED IS:

- 1           1.     An airborne radar system, comprising:  
2                 a radar antenna;  
3                 radar circuitry coupled to the radar antenna;  
4                 a runway database comprising runway location information;  
5                 a processing device retrieving from the runway database, runway  
6 location information for a runway being approached by an aircraft, based on the  
7 location of the aircraft, and directing a radar beam defined by a polygon which  
8 represents the runway and which is derived from the runway information, the  
9 processing device determining whether there are any obstacles on the runway.
- 1           2.     The airborne radar system of claim 1, wherein the location of the  
2 aircraft is provided using a position sensor in communication with the processing  
3 system.
- 1           3.     The airborne radar system of claim 1, wherein the polygon is  
2 defined by latitude and longitude.
- 1           4.     The airborne radar system of claim 1, wherein the runway database  
2 is on board the aircraft.
- 1           5.     The airborne radar system of claim 1, wherein the radar beam is a  
2 beam sharpened compressed radar.
- 1           6.     The airborne radar system of claim 1, wherein the processing  
2 device determines the direction of the radar beam based on the location of the  
3 polygon.
- 1           7.     An airborne sensing system, comprising:  
2                 a sensing device for sensing objects outside of an aircraft;

3                   a runway database comprising runway location information;  
4                   a processing device retrieving from the runway database, runway  
5 location information for a runway being approached by an aircraft, based on the  
6 location of the aircraft, registering, the runway location using the sensing device  
7 based signal and the runway location information from the database, and  
8 directing a radar beam defined by a polygon which represents the runway and  
9 which is derived from the runway information, the processing device determining  
10 whether there are any obstacles on the runway.

1           8.     The airborne sensing system of claim 7, wherein the sensing  
2 device comprises a synthetic vision device.

1           9.     The airborne sensing system of claim 7, wherein the sensing  
2 device comprises a millimeter wave sensing device.

1           10.    The airborne sensing system of claim 7, wherein the location of the  
2 aircraft is provided using a position sensor in communication with the processing  
3 system.

1           11.    The airborne sensing system of claim 7, wherein the polygon is  
2 defined by latitude and longitude.

1           12.    The airborne sensing system of claim 7, wherein the runway  
2 database is on board the aircraft.

1           13.    The airborne sensing system of claim 7, wherein the radar beam is  
2 a beam sharpened compressed radar.

1           14.    The airborne sensing system of claim 7, wherein the processing  
2 device determines the direction of the radar beam based on the location of the  
3 polygon.

1           15.    A method of detecting an obstacle on a runway, comprising:  
2                    retrieving location information relating to the location of an aircraft;  
3                    retrieving, based on the location information, data representative of  
4 the location of the runway;  
5                    registering, the runway location using a radar based signal and the  
6 data;  
7                    sensing within the perimeter of the runway location, the presence of  
8 an obstacle.

1           16.    The method of claim 15, further comprising:  
2                    determining the location of the obstacle within the perimeter of the  
3 runway location.

1           17.    The method of claim 15, further comprising:  
2                    communicating the presence of an obstacle to a pilot of the aircraft.

1           18.    The method of claim 15, further comprising:  
2                    providing an audio alert to the pilot of the aircraft.

1           19.    The method of claim 15, further comprising:  
2                    directing a beam sharpened radar at the runway location.

1           20.    The method of claim 15, wherein the perimeter of the runway  
2 location is defined by a polygon.